Claims

[c1] A method for adjusting at least one portion of a light beam in a microscope, wherein the portion is defined by an adjustable optical element and a position, at which a device for adjusting is mounted, comprises the following steps:
-coupling in a light beam of a microscope into the device for adjusting the light beam and thereby generating a coupled in light beam in the device;
-directing the coupled in light beam to at least two photo detectors wherein each of the photo detectors are spaced differently from the position;
-determining the deviation of the coupled in light beam from the nominal position by the electrical signals of the photo detectors; and
-adjusting the optical element by at least one set element for bringing the coupled in light beam into nominal position.

[c2] 2.Method as defined in claim 1 wherein the adjustment of the optical element is carried out by the user, and the optical element and the set elements to be changed are shown to the user on a display, so that the coupled in light beam is brought into the nominal position.

[c3] 3.Method as defined in claim 1 wherein the adjustment of the optical element is carried out automatically and the optical element and the set elements to be changed are shown a display and the actually and automatically changed set element is high lighted on the display, so that the coupled in light beam is brought into the nominal position.

[c4] 4.Method as defined in claim 3 wherein the set elements are operated electromechanically.

[c5] 5.Method as defined in claim 1 wherein for visual control of the nominal position the coupled in light beam is positionable with reference to at least one visual aim mark.

[c6] 6.Method as defined in claim 1 comprising the following steps:
-determining the spatial position of the light beam in a portion of the microscope, wherein the coupled in light beam is guided to two photo detectors, which are configured as 2-dimensional position sensitive sensors,

and

-calculating the position of the light beam in the portion of the microscope relative to the defined optical axis form the places of impact of the coupled in light beam on the position sensitive sensors.

[c7] 7. Method as defined in claim 6 comprising the further steps:
-displaying the deviation of a place of impact of the light beam from the nominal position in graphical or numerical form on a display connected to a computer, wherein the computer is connected to the device for adjustment, and
-displaying the change of the places of impact of the light beam during the change of the set elements.

[c8] 8.Method as defined in claim 7 wherein the deviation of the places of impact from the nominal position of the coupled in light beam on the first photo detector is determined by first coordinates and is determined on the second photo detector by second coordinates.

[c9] 9.Method as defined in claim 1 wherein a first position is placed between a light coupling in optic and a beam splitter.

[c10] 10.Method as defined in claim 1 wherein a second position, is placed between a scan module and a scan optic.

[c11] 11.Method as defined in claim 1 wherein a third position is placed between an optic and a microscope optic.

[c12] 12.Method as defined in claim 1 wherein a fourth position is placed between a detection pinhole and a detector.

[c13] 13.A microscope comprising:
-an illumination source for illuminating a sample,
-a microscope optic, wherein the illumination source and the microscope optic define an optical axis of the microscope,
-at least one adjustable optical element is provided on the optical axis of the microscope, and
-at least one device for adjusting is mounted at a position downstream from the

optical element on the optical axis of the microscope.

[c14] 14.Microscope as defined in claim 13, wherein the device for adjusting comprises

-means for coupling in a light beam to be adjusted into the device,

-a coupling in point and a coupled in light beam are defined by the means for coupling in,

-at least a first and a second detector, each positioned in different distances to the coupling point, and

-at least one beam splitter is provided in the coupled in light beam, wherein the beam splitter directs the coupled in light beam onto at least one of the photo detectors.

[c15] 15.Microscope as defined in claim 13, wherein an at least one aim mark is provided for a visual control of the individual places of impact of the coupled in light beam on the first and the second photo detector and the aim mark is placed apart from the coupling in point.

[c16] 16.Microscope as defined in claim 14, wherein the photo detectors are configured as 2-dimensional position sensitive sensors.

[c17] 17.Microscope as defined in claim 13, wherein a computer and a display are provided, and the deviation of the place of impact of the light beam from a nominal position is shown in graphical or numerical form on the display.

[c18] 18.Microscope as defined in claim 17, wherein at least one adjustable optical element together with several set elements is shown on the display, and at least one of the set elements is high lighted, which needs to be changed for adjusting the optical element in order to bring the coupled in light beam and consequently the light beam into the nominal position.

[c19] 19.Microscope as defined in claim 18, wherein the adjustment of the high lighted set element is carried out by the user.

[c20] 20.Microscope as defined in claim 18, wherein the adjustment of the optical element is carried out automatically and the set elements are operated

electromechanically.

[c21] 21.Microscope as defined in claim 13, wherein the deviation of the places of impact from the nominal position of coupled in light beam on the first photo detector is determined by first coordinates and on the second photo detector is determined by second coordinates.

[c22] 22.Microscope as defined in claim 13, wherein the microscope is a confocal scanning microscope.

[c23] 23.Microscope as defined in claim 22, comprises a light coupling in optic, which couples the light coming from the illumination source into the optical axis of the confocal scanning microscope, an illumination pinhole is positioned downstream from the light coupling in optic, a beam splitter directing the illumination light beam onto a scan module, a scan optic, an optic and a microscope optic, which images the illumination light beam onto a sample and a detector with a detection pinhole for detecting the detection light beam.

[c24] 24.Microscope as defined in claim 23, wherein a first position is placed between the light coupling in optic and the beam splitter.

[c25] 25.Microscope as defined in claim 23, wherein a second position is placed between the scan module and the scan optic.

[c26] 26.Microscope as defined in claim 23, wherein a third position is placed between the optic and the microscope optic.

[c27] 27.Microscope as defined in claim 26, wherein a fourth position is placed between position a detection pinhole and the detector.